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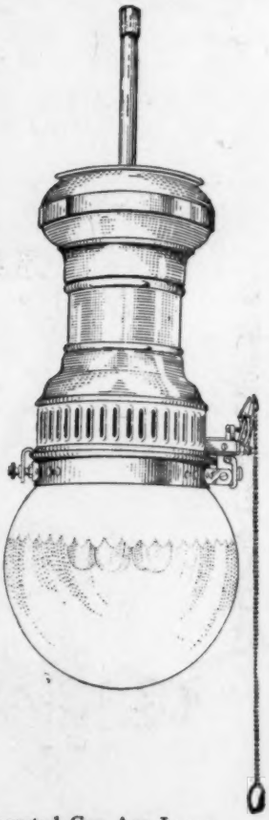

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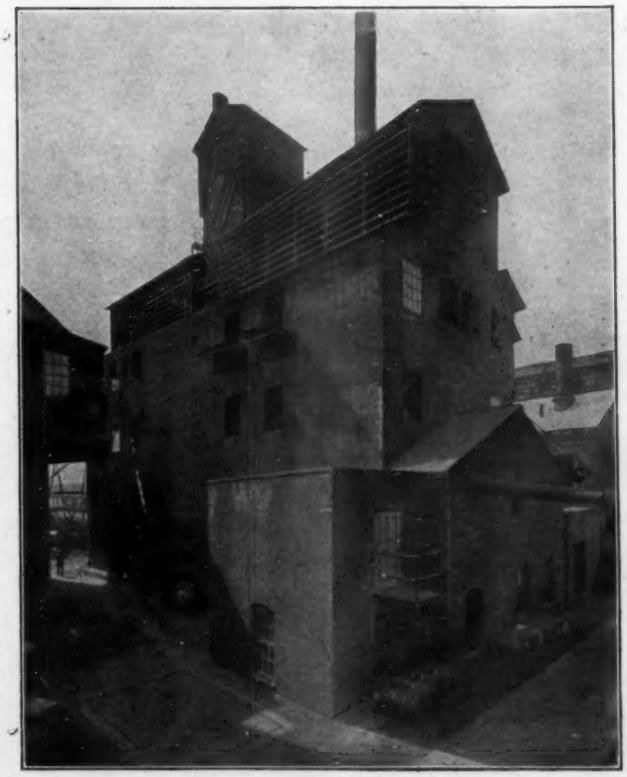

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Fuel Competition—Its Effect on Gas*

Merchants or salesmen

Prof. Philip Cabot

Harvard University, Cambridge, Mass.

I SPEAK to the engineers of the gas industry, but I do not speak as an engineer or about engineering. I speak as a salesman and about selling, and I venture to think that it is a subject that will interest you because, while the industry could not well go on without engineers, the engineers could not well go on at all without the industry. Unless the goods you make are sold, and sold well, you will be forced to stop making them.

The particular point about selling to which I want to direct your attention is the distinction between the salesman and the merchant. The business of both is to sell goods, but the mere salesman is a man of short views and narrow vision who must be guided and controlled by a man of long views and broad vision or he will soon reach the end of his vision and come to grief. The salesman of broad constructive vision, who understands the statesmanship of trade, is the merchant. Such are the men on whom all great industries must rely.

The Earmarks of the Great Merchant

Now, what are the earmarks of the great merchant by which you can pick him from the herd of his undistinguished fellows? You men of New England ought to know, for we have bred them here! The great merchant always reminds me of the sea captain: assured and confident in the turmoil of the elements; gray around the temples, with a face deep-lined by thought, and puckered about the eyes from peering into the eye of sun and wind or searching the fog bank for a sigh. They are men who seem to thrive on danger but who never seek it; prudent when prudence will serve, but fierce and stark as your New England hills when hell breaks loose and others run for shelter. For, the merchant, like the sea captain, is an adventurer at the core, who lives in a world of risk where eternal vigilance is literally the price of life; a man to whom competition is not only the life of trade, but the breath of life. And yet, the great merchant has a profound serenity—an imperturbable self-confidence—which looks quite like the gift of the gods in the face of danger. But his faith in himself is not assumed—it is not a magic gift. It is the confidence of the man who knows he is secure because the very forces that threaten others are protecting him.

Forces That Make Him Safe

What are these forces in the competitive world in which he lives which look so threatening but which make him safe? It is of the essence of a system of competitive industry that the price of what the merchant has to sell is fixed by the buyer. The buyer makes the price, and he neither knows nor cares what the goods may have cost. If the figure on the price tag does not suit him, he turns away with his money in his pocket. This suspended buying power in the market is the power of life and death. The buyer is the Lord High Executioner at whose nod the merchant and the manufacturers live or die. In all competitive trade the buyer decides who shall live and who shall die, for the manufacturer lives upon his profit—without it he can not live—and the buyer is the man who decrees whether he shall survive or go to the wall. The law of competitive trade is this—that the market is supplied by hundreds or thousands of separate competitors, each

*Delivered at the Annual Meeting, N. E. Association of Gas Engineers.

with a different cost—the buyer ignores the costs of all of them, takes what he wants at the price that suits him, and thereby determines both the demand and the supply. Among all who compete for his favor the man with the highest cost, whose goods are taken, determines the price for all, for the buyer must have his goods and so must pay him enough to keep him alive and producing goods. But he lives on starvation wages and upon the brink of eternity. You will look in vain for serenity upon his face, or for confidence in his gait. He lives in a world of fear and dines upon anxiety. But where there is a top there must also be a bottom. The manufacturer or the merchant with the highest cost is matched by the man with the lowest, and if the high-cost man lives in Hell, the low-cost man lives in Heaven. He may well be serene and happy, for he is guaranteed a market for all his goods and guaranteed a handsome profit—a profit often of staggering proportions which is forced upon him and which he can not escape from if he would. He has, in fact, within the limits of his productive capacity, a true and complete monopoly of which no other man can deprive him, and which carries no stigma with it. If he manage with prudence and with mercy, if he keeps his cost down, does not too rapidly expand his output, and allows his poor brothers to live, he has nothing to fear. He may have wealth, honor and the substance of monopoly at one and the same time. He is the sea captain with the tight ship, proof against fog and gale so long as he takes his observation daily and follows chart and compass.

Fear and Hatred of Monopolies

If this is a true account of what happens in competitive trade and this man is the true monopolist, how shall we account for the fear and hatred with which men have looked upon monopoly from the birth of our industrial era?

It is an axiom of our time as it was of Queen Elizabeth's that "There is no good monopoly but a dead one." Private monopoly is hunted down and destroyed by every government, and the private monopolist is hated like the plague. Here is indeed a startling paradox. To one man monopoly brings wealth and honor and to another persecution and disgrace.

"There is no good monopoly but a dead one." How can we explain the position of Henry Ford with an effective monopoly in his line of activity, and wealth and honor to boot?

Good and Bad Monopolies

The answer, I suspect, will be found in a slight inversion of the catch phrase. Men say, "No good monopoly but a dead one," but they act upon the principle of "No bad monopoly but a dead one." The fact is that what men fear is not monopoly but the dead hand; the monopoly which has died upon the job. Monopoly achieved and held by the able man in a free competitive field carries no stigma with it. In fact we love and honor such men. The man we hate is the man who has obtained monopoly without fighting for it. But why do we hate him? The answer is clear and simple. He seeks to destroy the buyers' control over the market. We are all buyers, and we live in an industrial civilization in which the watchword is "The buyer makes the price." The man who attacks that principle strikes at the foundation of our economic life, for we have found no sure way of fixing prices except when the buyer fixes them. Every government in history has tried in some emergency to fix prices and has failed, and men rightly fear to be forced back upon that method. When the monopolist has not won his monopoly in a fair fight in an open field, or when, having won it so, he does not hold it upon those terms, we hate and fear him. The competitive monopolist is the live monopolist; the non-competitive monopolist is the dead one. That is the true distinction. The principle upon which we act and upon which we ought to act is: "There is no good monopolist but a live one." The fighting monopolist is the only monopolist who is safe in the world in which we live today. And, therefore, whatever the trade or industry which you manage, bear this in mind. Unless you are the low-cost producer in that trade, you will live in fear; you will never be safe. Any day you may be forced to the wall and killed by the producer with lower costs. No franchise of monopoly, and no system of government protection or regulation will long protect you, and even while it does, you will be cordially disliked.

Its Application to Gas

By this time, I am sure, many of you are wondering what all this talk is about. What has it got to do with you? You are in the gas business—a public service—which, by the nature of things, is, and must be, a monopoly. You did not make it so, and you can not change it. What is the use of so much talk about competitive trades where the buyer makes the price? Your field is non-competitive—you make the price when the government, through its regulating commissions, will let you, and when it will not—when the commission makes the price—you obediently take what you can get. You say that the industrial world which I have been describing

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The Attractive Office of the Southern Counties Gas Co., Santa Ana, Calif.

is the world of competition for a profit in which men fight desperately for their profits and, if they lose, they die. One man's profit is another man's loss. This is industrial warfare which would cause serious waste if applied to the industries which we class as the public utilities. Competition, you will tell me, has been tried in this field—has failed, and it has been abolished. Regulated monopoly has been set up in its place.

Gas Not a Monopoly

Now, I do not deny that such is the accepted formula, and there are some occasions when it may be true. It is even possible to use these stock phrases in such a way that they fairly describe what goes on in the industries called public utilities. What I do say (even at the risk of shocking you or making you laugh) is that your business—the gas industry—is not a monopoly; that, on the contrary, it is a highly competitive business, and that it is governed by the law of competitive trade, that is, by the law of supply and demand. And, last but not least, I say that in the gas business, as much as in the dry goods business, the buyer makes the price. Of course, I may be wrong, but after many years of effort in this and in allied fields I have come to the conclusions that the success of the industry rests upon the acceptance of this conclusion—that, if it is not true, the industry is no place for able and ambitious men, and that the great successes in this field, as in every other, have been due to the recognitoin that the industry is competitive, that the buyer makes the price, and the manager of a great gas company, if he would succeed, must follow the same principles and use the same chart and compass as the captain of any other great industry. In short, I contend that the great manufacturer, the great merchant, and the great public utility manager achieve success by following the same law.

It is not long since a high executive of a great public utility declared that his aim was not to make a profit but to do a service, and that when he had been paid his wages he would ask for nothing more. Such men seem to me to have sold themselves into industrial slavery. They have accepted the stigma of monopoly, and they suffer from an inferiority complex. If that is all which life offers to the men in the public utilities, the business is doomed to fail. Young men with ambition and ability, looking for a chance to test their powers, and moved by the sporting instinct, will not submit to that. They will go where there is a chance to win and also a chance to lose; where the able man can beat the blockhead, and where their winnings can not be taken from them. The public utilities will be forced to take the inferior men, and their managements will degenerate into mere bureaucracies. The end of the road is government operation and ownership.

Gas Business on Sound Competitive Foundation

No man here would wish to see that happen, and there is no reason that it should. In fact, I do not believe that we could bring that to pass if we tried. The sound economic forces of our world would be too strong for us. The gas industry rests upon a sound competitive foundation and, if the captains will steer a true course, they can live down the stigma of a dead monopoly with which they were born, so to speak, and reach the position of the live monopolist—the low cost producer in a free competitive field. It is to the demonstration of that proposition that I now proceed.

Men tell me that the gas business is a natural monopoly. Could anything be more absurd? In plain English, what is your business? Selling heat? Does nobody else sell heat? I have lived in this community for more than fifty years and I never lacked for fuel to heat or cook with, but I never bought a foot of gas. Other people supply heat and do it well. Fifty years ago the gas companies sold light in competition with candles and kerosene oil, but they lost the fight more than twenty years ago to the electric companies. Since that time they have struggled into the heating field and have won a small part of it from the coal dealers. But just as they began to make a little headway, fuel oil came in and began to fight them, so that now they have a double and a desperate fight upon their hands. Certainly during the greater part of my lifetime the gas industry has been a competitive business, not in the sense that two or more gas companies competed in the same town for the same customer, but in the sense that the gas companies have competed for their customers with the electric companies, the coal dealers, and the oil man. For practical purposes, the gas business is as competitive as the automobile business. That competition is not between gas companies is true; the competition is between fuel dealers. Nobody but Ford can sell you a Ford car, but Ford has competition just the same. His success and his monopoly do not depend upon the absence of competition but upon the presence of it. He is the low-cost producer. Hence his monopoly and his popularity.

In many places the gas companies have got the worst of it. Their competitors have beaten them and they have been left with a greater number of unprofitable customers whom they can not get rid of. They are like the man who had the wolf by the ears and needed help to let him go.

The Price Factor

Now in all this competitive process, who has made the price? The buyer. He has determined how much gas the companies should sell and what they should get for it. This is shown by the fact which everybody admits, that, as prices rise, consumption falls. At about $1 per 1,000 cubic feet gas is used for cooking when hard coal is $14 per ton. At $1.50 per 1,000 gas will not be used if coal can be had at less than $18 per ton. At about 65 cents per 1,000 gas will be used for house heating when coal is $14. At $1.00 per 1,000 you can't sell it. Although the operation of the law of supply and demand is slightly obscured, it is working in the gas industry, and, therefore, whether he will or no, the gas manager

must conform to the law of competitive trade. That law provides that the marginal or high-cost producer lives always in fear of his life—while the low-cost producer enjoys a safe, very profitable and highly honored position. The moral of this is clear. Never rely upon a franchise or monopoly to protect you. It will fail you at the pinch and make you unpopular in the meantime. Be the low-cost producer in your competitive field, and, if you can't get the lowest cost, get as near it as you can, for the life of the marginal producer is hard. If you want to be the low-cost producer in the heating field, you must do what other successful manufacturers do in their fields. You must develop quantity production and high efficiency of operation. To do that you must have a large market for your output which, in turn, is obtainable only at a low price. You must compete for every customer with two or more strong antagonists who will force you to put forth your full strength to drive them from the field. There is no doubt that you can do it if you really tackle the job, but you will do well to remember that in competitive trade no man except the low-cost producer is safe, and that a non-competitive or monopolistic trade is both dangerous and unpopular.

Leaving Well Enough Alone

It may be worth while to consider the alternative of leaving well enough alone. Many of the gas companies are sound enough as they are, their business is stable and, while they have many customers who are too small to be profitable, the larger ones make up the loss. So far as we can see they will continue to do so without much grumbling. When, then, should the gas companies seek to develop the heating and the industrial field? There are, I think, two answers to that question. First, this is the wholesale competitive field which corresponds to the power business of the electric companies, and, if the analogy is accurate, it is the only field open to the gas companies which will enable them to reach a basis of quantity production and low costs. If this is the result which they seek, they must look for it there. Moreover, there is reason to suppose that when they are once committed to it and have learned the business, they will find the wholesale field more profitable than the retail. This has been true of the electric companies and is the common experience in competitive trade.

Gas Must Be the Heating Fuel Par Excellence

But, the second reason is, I think, more cogent. If the gas companies do not occupy this field, someone else will. Gas will be used for heating. Our houses will be heated with gas, and the demand of many industrial establishments must be supplied. The gas companies can not lie down upon their franchises. This field can not be closed. It is like the electric power business in the great industrial centers. If the electric companies had refused to go into that business, the manufacturers would have supplied themselves. In some of the great manufacturing cities the threat of the manufacturers to combine and supply themselves forced the hand of the electric company directors.

As it was in the power field ten years ago, so it is in the heating field today. If the gas companies do not occupy it, someone else will. Then they will find themselves in the pitiable position of being the small marginal producer in a competitive field where they might have been the dominating low-cost men. There are doubtless risks that must be faced upon the road, but life is all risk, and without risk there can be no profit. Profit is payment for risk, and you will do well to remember that the bold, aggressive course is usually the safest. The man who decides not to take a risk often does a risky, if not a foolhardy, thing.

The Views of the Merchant

These are the views of the merchant and not those of the salesman. I venture to think that it is because of failure to grasp the essentially competitive nature of the industry that the engineering side of the gas business has fared better than the selling side. On the engineering side competition has been active and freely recognized, and the result has been sound health. But the selling side has been handicapped by the notion that the business was a monopoly and that, therefore, powerful and far-sighted selling effort was not needed. Salesmen and not the merchants have too often been put in charge and thus the growth of the industry has been handicapped and distorted.

But if once the idea is firmly grasped and boldly asserted that the business is not a monopoly but is fiercely competitive, the major problem which confronts you can be easily solved. Regulation by state commissions will lose all its terrors. Valuation, the fair rate of return and the regulation of prices which have kept some of the companies in constant litigation for more than twenty years will become matters of very minor importance. They all arise from the necessity for price regulation where competition has ceased to operate, and once the fact of free competition is established and generally recognized, the problem of price regulation will disappear. For all men know that no method of regulating prices has ever been devised which is so effective and so generally satisfactory as competition.

Legal Troubles and Competition

If this seems fanciful to any of you, I ask you to consider the fact that experience in the past has demonstrated that the clash between public regulation and private management has been most severe where competition has had the smallest play. Take, for example, the Consolidated Gas Company of New York. No well-informed person will accuse the management of this company of looking for trouble, and yet the company has been in constant litigation for twenty years. The reason is not far to seek. In

this case you have monopoly in another and not less objectionable form—the monopoly of the buyer. Price regulation by the buyer can only work well where there is more than one buyer so that the buyers compete with each other. In New York, for reasons which are probably political, the buyers have combined and acted together through the Legislature in Albany. The Legislature has tried to fix the price for all the small consumers who constitute almost all the buyers, and the result is what you see. The Consolidated Gas Company has had to fight for its life to avoid confiscation of its property. This aspect of the economic problem has received far less attention than it deserves, but it is too extensive for me to handle here so that I merely throw you the suggestion to be considered at your leisure.

I leave you, therefore, with this last word. Plunge boldly into the competitive heating field, make yourselves dominant in it, and you will be safe, prosperous and highly respected in your day and generation.

Modernizing the Small Gas Works*

The technical side of the problem discussed

H. C. Gross

Superintendent, Pensacola Gas Co., Pensacola, Fla.

TO modernize the small gas plant is to equip and operate it in accordance with the best present-day practices giving the lowest holder cost. Necessarily the extent to which new equipment is installed and technical operations are followed, will vary with the output. Modernizing can be carried to a point where it will become an item of expense.

Housekeeping

No plant, whether large or small, is modern unless it is clean and orderly, for present-day practice in the gas industry strongly endorses the use of paint, a place for everything and everything in its place, and a liberal allowance in the budget for brooms, wiping cloths and waste. It is not necessary that the gas plant be an eyesore and a nuisance in the neighborhood.

There is an old saying something like this—take care of the dimes and the dollars will look out for themselves. Keep a plant clean, orderly and well organized and there will be less trouble in getting the big items such as generator fuel, oil, boiler fuel and maintenance charges down to a minimum.

Employee Welfare

The small plant is not modern unless the safety of the employees is provided for, reasonable provisions are made for their comfort and health, and the plant has adequate fire protection. In the matter of safety there should be no distinction between plants of any size, for it is just as incumbent on the management of the plant employing a dozen men to protect them against accident as it is on the management employing a hundred men.

In addition to providing guards and safety devices for machinery, removing tripping hazards, danger of falling objects, defective tools and the many other causes of accidents every plant should drill its men in the proper methods to be used for resuscitating those asphyxiated by gas or smoke and in giving first aid to the injured. This requires first aid equipment that should be a part of every plant.

Because a man accepts employment in a small plant is no sign that he prefers to go home in his overalls with his face and hands covered with soot and grease. No matter how small the plant, there should be a washroom and locker room. It need not be tiled and fitted with the latest porcelain and nickel fittings but it should be clean and sanitary, with a washstand and shower and the comfort of an abundance of hot water. A locker that locks should be issued to every employee. The employee who, after his day's work, prefers a shower and clean clothes is usually not only a better man but a better employee. He deserves an opportunity and encouragement.

Fire Protection

Fire protection in the gas industry is common business sense and a civic duty, and applies to the small plant as well as the large one. In addition to an adequate water system, consisting of at least one 25 or 50-foot reel of fire hose, equipped with a nozzle, in each building and permanently attached to the fire mains, there should be a liberal supply of hand chemical fire extinguishers advantageously located throughout the plant. A Foamite Firefoam apparatus and a large chemical extinguisher mounted on wheels, although together representing an investment of several hundred dollars, are well worth the consideration of the smallest plant.

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*Delivered at 1926 Annual Meeting of the Southern Gas Association.

Daily Report

The importance of a daily check on plant operations is so obvious that it seems unnecessary to state that every plant should be equipped with a station meter so that the daily production can be figured, scales for weighing fuel in order to get the fuel consumption per thousand and an oil meter for gas oil consumption per thousand. The daily report should show the corrected gas made and sent out, make per run and set hour, and boiler fuel, generator fuel and oil per thousand cubic feet of gas made. An hourly check of gas made is time well spent as it frequently discloses irregularities in operation before they cause a serious waste of fuel or oil. In the manufacture of carburetted water gas, oil is the largest single item of cost and a close check on heating value will result in a saving that will soon pay the cost of a Brady B.t.u. indicator or a calorimeter. At present prices of oil, the saving of one-tenth of a gallon of oil is equal to one-half to three-fourths of a cent per thousand. A close check on heating value will tend toward a minimum variation with resulting improved service to the consumer.

Steam

Steam represents about 10 per cent of the net holder cost and in many plants its production receives little attention, whereas a little time and a small additional investment will effect a material saving. The addition of a few hundred dollars to the repair bill of the small works stands out with annoying prominence in the monthly financial report, while a few tons extra boiler fuel may not be noticed. Steam piping is often poorly covered or not covered at all. Steam is allowed to leak through valves and pistons of engines and pumps because the operator does not know that the leakage is going on. A simple block test will tell the tale. There is a tendency to let a little known waste go on month after month rather than run up the repair bill or add to plant investment. It is the same as cheating at solitaire, except when playing solitaire the joker is not used. Cold air leaks are inexcusable—a candle will detect them and boiler cement will stop them. Every setting should be coated with a plastic compound.

Testing the Firing

Firing is often done in a hit or miss fashion, whereas it should be scientifically controlled. The small works may not find justification for the purchase of a CO^2 recorder, but a draught gauge, stack thermometer and an Orsat apparatus are essentials in making periodic checks on firing.

Various coals require different methods of firing to secure maximum efficiency. With the aid of the draught gauge and Orsat the method of firing best adapted to the coal and the boiler can be determined and maintained.

Where the water causes scale formation, water softening apparatus should be installed in preference to using boiler compounds, as this removes the scale-forming materials before they enter the feed water heater and keeps the feed lines, water heater, pump and boiler free from scale.

In addition to a mechanical flue scraper, a rear or front end soot blower used about every four hours will soon pay for itself in the saving of boiler fuel.

The use of hand stokers in some small plants might mean a sufficient saving in fuel and labor to warrant their installation.

Exhaust Steam

Exhaust steam may be classed as waste heat. Its utilization is essential to economy. The small plant can well afford a boiler feed water heater, using exhaust steam to heat the feed water to 210° F. when its use means a saving of 1 per cent for each 10 degrees the water is heated. The heating of buildings should be done by exhaust steam, and, although many of the plants of the south are not troubled with holder heating, wherever it is necessary it should be done with exhaust steam.

The use of exhaust steam in water gas sets is coming more and more into use. The exhaust steam accumulator makes this possible in the plant operating only one set. Whether the investment is justifiable in the small plant is questionable, but the plant facing the need of additional boiler horsepower might find it of advantage to investigate the exhaust steam accumulator.

Waste Heat

The blast gases leaving a water gas set at about 1300° to 1400° F. afford an opportunity to recover a large amount of waste heat, which recovery can be made by means of a waste heat boiler. On account of the investment and annual charges for interest, taxes and repairs, the plants operating sets smaller than six feet will not find the waste heat boiler profitable. Where a six-foot set is operated at capacity, 800 M. per day, the net return on investment is 16 per cent. A six-foot set operating at 200 M. per day will give only a 5 per cent net return. Many of the small plants of the south are operating five and six-foot sets and the small plants operating larger sets need them chiefly for the winter heating load. The days on which the output is such as to justify a waste heat boiler are comparatively few.

In the larger plants there is little question as to the value of a waste heat boiler. The following table taken from a paper, "Steam-Economy of Generation and Utilization," presented by Mr. C. A. Schlegel of the U. G. I. Contracting Co., before the New England Association of Gas Engineers, gives the investment and saving for various sizes of sets.

Automatic Control

The automatic control of water gas sets gives uniform operation which is often difficult to obtain with the class of labor available in this section for hand operation. It permits the use of a shorter cycle with

Size of Set	Capacity per Day, Thousands	Fuel Saved per Year, Tons	Value Fuel Saved	Investment	Interest, Taxes and Repairs, 12%	Net Return Dollars	Net Return Per Cent
6	800	600	$4,200	$15,000	$1,800	$2,400	16.0
7	1,200	900	6,300	17,500	2,100	4,200	24.6
8	1,700	1,275	8,925	20,000	2,400	6,525	32.6
9	2,300	1,725	12,075	23,000	2,760	9,315	40.5
10	3,000	2,250	15,750	27,000	3,240	12,510	46.3
11	3,500	2,625	18,375	30,000	3,600	14,775	49.2

its attendant improved results, especially where bituminous coal is used as generator fuel. Where it is possible to have the boiler on the same level with the operating floor the automatic control enables one man to operate the set and fire the boiler, a saving of from $4 to $10 per day. The small plant can well consider the installation of this modern improvement.

Bituminous Coal As Generator Fuel

During the past few years the use of bituminous coal as generator fuel has come into wide use. The increased price of coke forced the gas engineers to experiment with bituminous coal and the results obtained were amazing. This should especially appeal to the operator of the small plant, for he can use bituminous coal with less difficulty than it is used in a large set. The coal should be of egg size, 2" x 5" or 4" x 6", hard, not easily broken and with a minimum of fines. No set rule can be given for operations, but essentially they are the same as when using coke. Experiment will soon disclose the proper operating conditions. The fire must be watched for blow holes, and if they cannot be eliminated by periodic barring down, then a mixture of coke with the coal is necessary. The most common mixture is 70 per cent coal and 30 per cent coke. Smoke can be eliminated by light and frequent charges and increased secondary air. There are still a number of sets in use operating on up run only. These can be modernized and use bituminous coal by the addition of either the Chrisman cycle or the Steere back run, which will give them up and down steam, a saving in generator fuel and increased capacity.

A large number of reports, papers and articles have been written on the use of bituminous coal as generator fuel. In the main they show very little increase in generator fuel per thousand, and where the Chrisman cycle or the Steere back run is used a decreased consumption is generally shown. Oil per thousand decreases due to the increased B.t.u. of the blue gas resulting from the addition of a small amount of coal gas. Generally there is a falling off in capacity.

Whether using coke, bituminous coal or a mixture of both, the small plant to be modern must have its set equipped with steam meters, an indicating pressure gauge for blast pressure and an indicating and recording pyrometer for superheater heats.

Residuals

Tar is the only residual from a water gas plant, and its value is often lost sight of in the small plant. The cost of apparatus for separating tar from an emulsion is generally prohibitive for the small plant and largely unnecessary if the oil is properly treated in the set and a tar separator of adequate size and proper construction is used. There are a number of manufacturers of road and flooring materials and other products who are constantly in the market for water gas tar at a fair price. The local market for tar as wood preservative, paint and disinfectant should not be neglected, but as a rule it does not take the entire production. A 10,000 gallon steel tank into which the tar can be pumped periodically from the separators and relief holder is a good investment. When filled with a good grade of tar containing less than 3 per cent of water it is ready to be pumped into a tank car furnished by the manufacturers and should bring anywhere from $400 to $600. If there is any reason to suspect more than 3 per cent moisture in the tar a test should be made before loading. In any event, three one-quart samples should be taken and held until the tar is accepted and paid for. From 15 to 20 per cent of the oil used is recoverable as tar and its sale is a sizable offset to operating costs.

Modern practice tends toward the use of labor saving devices. The small plant should have at least one portable conveyor for unloading and handling fuel and often this conveyor can be used in connection with charging purifier boxes.

Condensing Facilities

Many small plants are spending hundreds of dollars each year in the distribution department for repairing meters and servicing appliances, to say nothing of the loss due to non-registering meters and the annoyance to consumers, when the investment of a few thousand dollars at the plant in proper condensing apparatus would eliminate the major portion of the expense and annoyance. Where large quantities of cool water are needed and artesian water is available at no great depth a well drilled in the works yard may give sufficient cooling water at less cost than purchasing it from the water company or install a water cooling system.

The modern gas engineer does not always cure his low pressure troubles by making expensive main extensions, but frequently corrects them by installing a less expensive fan booster at the plant and increasing the pressure at the outlet of the governor.

Miscellaneous

The large gas works has its carpenter, machinist, blacksmith and other specialists. The small plant must depend on the foreman or utility man to make repairs. A large part of the work is done by outside shops. A small investment in tools, drill press, forge and lathe will make the plant less dependent on outside help and reduce the cost of repairs.

Not only does the small gas works need modernizing, but the entire small gas company needs it for the sake of economy, better service and increased business. It not only makes better employees, but it makes a more friendly and appreciative public. The man who lives in the small city has as much, and perhaps more, civic pride than the man in the large city.

If he can point out the gas works and gas office to the visitor without making apologies, have modern, clean motor equipment deliver his appliances to the door and bring the man who answers his call for service, he would not complain even if the modernizing cost him a few cents a thousand more.

The man who lives in the small city wants just as many of the conveniences and luxuries enjoyed by the man in the large city as it is possible for him to get, and good gas service is one of them.

Educational Work in Illinois

Industrial gas short course at the University of Illinois

THE following is the gist of a report made by the Committee on Cooperation with Educational Institutions, A. B. Greenleaf, Peoples Gas Light & Coke Co., Chicago, Ill., chairman, at the recent annual convention of the Illinois Gas Association.

The University of Illinois, through the College of Engineering, in cooperation with the Illinois Gas Association, is offering a three weeks Short Course in Industrial Gas Engineering on June 21 to July 10, 1926. (June 21 to July 3, 1926, at Urbana. July 5 to July 10 will be conducted on the Home Study Plan.)

Outline of Instruction

The object of this course is most clearly set forth in the final problem set for each student enrolled. (The week of July 5 is to be devoted to this work.) It is stated as follows: Each student is required to submit a complete report covering his recommendations as to the equipment that should be installed, to displace other fuels now being used by certain prospective customers in two of the three fields of gas service, these being the Industrial, the House heating, and the Hotel and Restaurant. This report must cover:

(a) A complete analysis of the present method of heating.
(b) The equipment recommended to displace the old appliances.
(c) Recommended main extensions.
(d) Size of Service.
(e) Capacity of meter required.
(f) Layout of interior piping.
(g) Temperature control to be used.
(h) A sales letter to the customer justifying the proposed installation.

Outline of Course

The outline of the course given in detail in the program below will consist of lectures, demonstrations, problems and practice in the principles and information necessary to enable each student to make the above report and to thoroughly convince himself of the advisability of using gas as a fuel.

A final examination in the various phases of the work of the course will be given and the grade in this examination, together with the grade obtained from the final report, will be used as the basis of the report sent to each general manager of the gas company sending men to this course. Recommendations, if necessary, will be made concerning any part of the work of the course in which their men are not sufficiently trained.

Program

Chemistry Building, University of Illinois

MONDAY, JUNE 21

Registration, Room 164 Chem. Bldg.

Addresses of Welcome by Dean Ketchum and Mr. E. K. Demlow, Room 161 Chem Bldg.

Preliminary Instruction, outline of course, reports etc., Room 161 Chem. Bldg., Professor T. E. Layng.

Lecture 1. Relation of Energy and Matter. This lecture will define and discuss the fundamental principles underlying gas engineering calculations. These may be briefly stated as the properties of matter, of energy forms and of the methods of change of state. Professor T. E. Layng.

Demonstration with actual practice in the proving of the principles stated in Lecture 1. Professor T. E. Layng and Professor F. B. Hobart.

TUESDAY, JUNE 22

Lecture 2. Continuation of Lecture 1. Professor T. E. Layng.

Demonstration with practice of principles discussed in Lecture 2. Professor T. E. Layng and Professor F. B. Hobart.

Lecture 3. Fuels and Their Combustion. The principles involved in the calculations of efficiencies in combustion with gas and competitive fuels will be discussed in this and the following lecture. Professor T. E. Layng.

Demonstration and Practice in Above Principles. Professor T. E. Layng and Professor F. B. Hobart.

WEDNESDAY, JUNE 23

Lecture 4. Fuels and Their Combustion. A continuation of Lecture 3. Professor T. E. Layng.

Demonstration and Practice in Above Principles. Professor T. E. Layng and Professor F. B. Hobart.

Lecture 5. Design and Layout of Service Piping. A discussion of the peculiarities of industrial, hotel and restaurant and industrial service with problems. Mr. M. I. Mix.

Lecture 6. Meters and Metering. A discussion of the principles of metering high and low pressures and demand meters, with problems. Mr. M. I Mix.

THURSDAY, JUNE 24

Lecture 7. Burners—Atmospheric. A discussion of the principles of design, advantages, limitations, construction, details and applications, with problems. Professor S. W. Parr.

Demonstration and practice in the use of atmospheric burners. Professor S. W. Parr.

Lecture 8. Burners—Blast. A discussion of the principles of design, advantages, limitations, construction details and applications, with problems. Professor S. W. Parr.

Demonstration and practice in the use of blast burners. Professor S. W. Parr.

FRIDAY, JUNE 25

Lecture 9. Combustion Systems—Surface. Mr. A. F. Mitchell.

Demonstration and Practice. A. F. Mitchell.

Lecture 10. Combustion Systems — Selas, Kemp, Proportional Mixers, etc. (To be announced.)

Demonstration and Practice. (To be announced.)

SATURDAY, JUNE 26

Lecture 11. Temperature Control. Mr. C. C. McDermott.

Demonstration and Practice. Mr. C. C. McDermott and Mr. A. Frydendahl.

MONDAY, JUNE 28

Lecture 12. Geenral Principles of Furnace Construction and Design. Professor W. Trinks.

Lecture 13. Refractories and Insulation. Professor C. C. Parmelee.

Lecture 14. Fuel and Furnace Calculation. Professor A. P. Kratz.

Fuel and Furnace Problems. Professor A. P. Kratz.

TUESDAY, JUNE 29

Lecture 15. Application of Gas to Low Temperature Operations. Mr. M. B. Weber.

Demonstration and Practice. Mr. M. B. Weber.

Lecture 16. Application of Gas to Non-Ferrous Metal Industry. Mr. D. W. Chapman.

Demonstration and Practice. Mr. D. W. Chapman.

WEDNESDAY, JUNE 30

Lecture 17. Application of Gas to Heat Treatment, Tempering, Hardening, Annealing, Carbonizing. Professor M. M. Austin.

Demonstration and Practice. Professor M. M. Austin.

Lecture 18. Competitive Fuels, Coal, Coke, Oil, Electricity, Analysis of Utilization Cost, Comparison of Basis of Unit Cost of Production. Professor T. E. Layng.

Lecture 19. Making an Industrial Survey. Collecting and classifying data; influence of such data on industrial rates. Mr. Lyle Harvey.

THURSDAY, JULY 1

Lecture 20. Fundamentals of Salesmanship. Professor F. A. Russell.

Lecture 21. Industrial Gas Salesmanship, Installations and Operations. Mr. F. F. Cauley.

Lecture 22. Hotel and Restaurant Salesmanship. Installations and Operations. Mr. H. D. Valentine.

Lecture 23. Hotel and Restaurant Installation and Operating Data: Refrigeration. Mr. H. D. Valentine.

Banquet, Inman Hotel. Guests of I. G. A.

FRIDAY, JULY 2

Lecture 24. House Heating—Estimation of Installation Requirements. Professor A. P. Kratz.

House Heating. Discussion of Methods, Steam, Hot Water, Vapor, Air. Professor A. P. Kratz.

House Heating Salesmanship. Mr. G. Carnahan.

Installations and Operations. Mr. G. Carnahan.

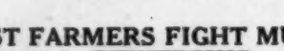
SATURDAY, JULY 3

Review and Discussion. Professor T. E. Layng.

Written Examination.

MONDAY, JULY 5, TO FRIDAY, JULY 9

After successfully completing the two weeks of prescribed instruction at the University, each student attending the Short Course in Industrial Gas Engineering will be assigned two specific and practical problems to solve. This work may be carried on by each student on the properties of the gas company of which he is an employee. These problems will be selected with a view to giving each man that kind of work that will enable him to be of the greatest possible value to his company.



COAST FARMERS FIGHT MUNICIPAL OWNERSHIP

The California Farm Bureau Federation, representing one hundred thousand farmers of the State, has filed a formal protest with the California Railroad Commission, which corresponds to the New York State Public Service Commission, against the taking over by the city of San Francisco of local gas and electric plants.

It is urged by the farmers that the institution of municipal ownership of public utilities would exempt from tax paying large and valuable properties, and that this decline in taxes in the cities would have to be made up by farmers and dwellers in rural communities.

It is further urged in the Farm Bureau protest that municipal operation of public utilities would in many cases cut off neighboring districts now served. The local service district should include all territory within the natural scope of the public utilities, they maintain, instead of being limited arbitrarily by the boundaries of a city.

An Old Stunt That Produced Sales

Too many of us are overlooking values in hand

J. B. Dillon

IT was early in March that the Public Service Company of Colorado, at its Denver headquarters, announced that during the week of March 8-13 it would hold a baking contest and demonstrate thermostatic control of gas ranges. Various prizes were to be given and it was all free. That it was to be an event of unusual interest was indicated by the fact that all of the meetings were to be held under the auspices of the Denver Housewive's League. That the meetings were well attended can be seen from the accompanying photograph, and some days it was necessary to turn many away, as there was not standing room.

On the Outside

When the opening day arrived, your correspondent went thither and in the main show window of the Gas and Electric Building he saw a Persian lilac in the rear center, a nice grass lawn, a flower border of many colors. The "folks" on the lawn were two white enameled gas ranges, the card sign inviting all to come and see what they could do. When I say all, it meant all the ladies.

Anyway We Went Up

The crowd was so great that we could not get in, but we heard Mrs. Harriett E. Langworthy, director of the Home Service Department of the Public Service Company, telling how to mix for those cakes, cookies, pies and bread that man loves to think he will find listed on the home menu. We smelt them baking and we got hungry and shoved our way in to get a "hand out." And, say, it was great!

Other lecturers were Mrs. Minnie B. Jackson, president of the Denver Housewive's League; the state Superintendent of Public Instruction; the Director of Home Economics in the Public Schools, and each stressed the necessity for caution as regards the child's nourishment. These lectures were worth the time, but there were many other good things in store.

The Source of Supplies

The merchants of Denver contributed the flour, sugar, eggs, fruits, etc., and right here they "got in good" with the ladies who do the buying, for they know that their commodities have merit. Then W. G. Bowman, of the Reliable Stove Company, was invited by C. A. Biglar, superintendent, and R. G. Munroe, manager of the new gas business department of the Public Service Company, to meet the ladies of Denver. He came, and in meeting the ladies, he met as well ten of the Reliable ranges equipped with the Lorain oven heat regulator connected to the gas supply in which the ladies were placing their delectables.

"By gosh, boys, why so many ranges?"

"Sh," said Biglar. "Shush," said Munroe.

And after it was all over these ten ranges and all that were in stock were sold, and Bowman was given an order for many more. That's why!

The Women's Paradise

That is just what the regulator attachment proved to be because they found that there was no chance of burning up things while they hung over the back fence talking to Mrs. Clancy.

A Sample Audience at the Contest

There was much merriment when the ladies just insisted that they must peer in and be sure that everything was all right, and it was about all Mesdames Langworthy and Jackson could do to keep them from the old habit, but when the results were shown, there were many "Oh's," but the majority said: "It is just wonderful."

How the Prizes Were Given

The ladies dropped their names on a numbered ticket in a box each day and the lucky number drawn entitled the holder to a handsome carving set. Then, there were prizes of foodstuffs given to those whom

(Continued on page 294)

As The Journal Views It

GAS AND COAL

Those gas men who have felt that the progress that gas has made in recent years in the industrial field and in the house heating field as well should have been sufficient to convince not so much the layman, but the engineer and technical man, of the fact that gas is the logical universal fuel, will be surprised to read now and then in the newspapers of remarks made by representative, well-known engineers that contradict this general belief. Not long ago, an engineer at a meeting of the Institute of Engineers, said that gas and oil are yielding to coal as an industrial fuel. Of course, he did not specify coal gas but referred to natural gas, and his reasons for saying that these two fuels were yielding to coal, was based on the gradual future failure of the natural gas supply and the high cost of oil.

It is strange that in studying the situation he did not take into consideration the part that is being played by manufactured gas in the industrial field. Here, we have a fuel whose supply is unlimited and whose use is not influenced by any scarcity of available sources of basic fuel. For some reason or other, manufactured gas was not given the attention due it.

This fact holds an important lesson. It simply shows that, while we ourselves may be thoroughly convinced of the benefits that are to be derived from the use of gas in the industrial field, and that while we ourselves may be absolutely sure and thoroughly convinced that it is the only fuel that bears all the earmarks of a universal fuel, nevertheless, there are still many who either do not know the story of gas and do not appreciate what it can do, or else do not agree with us. That laymen should feel differently, or be ignorant of what gas can do in the industrial field, is hardly surprising, but that engineers of experience and reputation should pass over manufactured gas and not give it due consideration in the study of a fuel problem, is rather disconcerting.

It shows, consequently, that we have still educational work to do. It is a clear indication that the efforts that have been made to secure publicity for gas, as an industrial fuel, are far from having reached a stage where they can safely be discontinued. We must go on with the work; we must continue presenting our case to the public, and not only to the great mass of people who are interested in a casual manner in gaseous fuel, but also to engineers and economists and men who have a much deeper interest in matters of this sort. We should not by any means be discouraged, for we know that we have a fuel that can meet all the requirements of a universal industrial fuel, provided that it is given a chance to do so. Therefore, we should determine to keep on striving with might and main to present our case in the proper manner, before those who are interested, and gradually thereby inculcate in the minds of all the conviction that gaseous fuel is the only one that has the ability permanently to solve the thermal problems of the industry and of the home.

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UTILITY REVENUE

The utility customer, when he pays his gas or electric bill, or when he inserts his nickel in the telephone slot machine, or pays his fare on the subway or street railway, may wonder just what becomes of the money that he releases into the treasury of the utility company. He may have a very fixed opinion about the matter, and generally one which would place the utility company in a position of making, by far, the greater portion of his payment serve for the payments of dividends to stockholders, not to say large salaries to employees. In other words, the general opinion is that most of the money taken in by the public utility company is more or less profit.

It may surprise the laymen, therefore, to learn of the fact that there is no company enterprise in any community that has so much of its funds invested in permanent improvements, in proportion to its gross receipts for its products, as the public utility company. This means, in other words, that the public utility, which of course includes the gas company, returns to its customers, the public that it serves, practically all of the revenue that it draws from them. The public utility has often been called the forerunner of progress in the community, and not only that but the "sine qua non" of all improvement and development in any city, town or village. For,

if the public utility cannot give the service that is necessary for the growth and progress of the community, such progress cannot take place.

It is a fact that long before there are real signs of any development in a locality, public utilities have already arranged for this potential development, so that when it does take place, they are in a position to render efficient service. It being ever ready to give service, to expand, to bring its service into new sections, the public utility demonstrates its real importance to its public. To be able to do so and actually to keep on giving such service and acting as a forerunner of sectional development simply means that by far the greater portion of the compensation received from its public must be returned by the public utility to the public.

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AN OLD STUNT THAT PRODUCED SALES

(Continued from page 292)

the judges declared had baked the best pie, cake or cookies. The judges consisted of the presidents of State and City woman's clubs, the wives of the mayor, the county judges and other prominent Denver officials.

At the end of the contest the ladies, who had attended all the meetings, had their cards dropped in a box and from among the vast number of cards, one was drawn and the holder was given, with the compliments of the Public Service Company, one of those wonderful gas ranges.

Introspection and Acknowledgment

Mr. C. A. Biglar, superintendent of the Domestic Gas Division, informs the writer that they have not used the baking contest idea for about five years, but the insistence of Mrs. Langworthy, Mrs. Jackson and Manager Munroe was so unrelenting that there was nothing to do but try it, and then W. G. Bowman entered into the spirit with all that a good gas range man could give. The results were more satisfactory than any one dreamed of.

Mrs. Harriet E. Langworthy, Who Superintended the Show

If the Denver folks can do it, you can do it. Do not spend too much time trying to find new ways, but better find a way that will introduce your plans into the home, so that the home managers may be able to realize that what they are about to attempt is just what they do at home, with this exception: that you are going to show them how to do it with better material and better tools. A change like this will be appreciated by all.

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UNUSUAL USES FOR GAS—WIDE RANGE IN INDUSTRIES

Among the 5,000 odd uses to which gas is put, in the application of heat in industry, may be mentioned—

The International Harvester Company, which uses gas in a great variety of places, has one furnace which alone burns more than 10,000,000 cubic feet of gas a month.

Modern bakeries serving the larger cities now depend largely upon gas for fuel in their huge traveling ovens where the bread and pastry are baked.

In the radio field, gas furnishes the heat necessary to make panels of bakelite used in the fronts of radio sets. It is also used to harden the steel dies used in shaping various radio parts.

Gas also plays an important part in the manufacture of gas ranges, both in the enameling of the exposed parts and in the melting and shaping of the metal parts of the stove.

In repainting automobiles it has been found that by means of steam generated with gas heat, combined with a chemical solution, the old paint can be washed off as readily as mud.

Gas plays an important part in the preparation of food, notably in the smoking and curing of meats. Sawdust is still used to produce the smoke, but gas is used in place of other fuels to burn the sawdust. It has been found that easy control of gas heat cuts down shrinkage in the meat and actually saves money in the whole operation.

Gas is very extensively used in the manufacture of optical goods.

Gas heat is used annually to hatch millions of chickens, which on reaching maturity lay eggs that are cooked by gas, and finally the chickens themselves may be cooked by the same agency.

In Detroit, automobile manufacturers use gas instead of gasoline in testing motors for automobiles.

In Chicago, the packers use gas in singeing the hair from pigs.

At Atlantic City, gas heat is used to dry bathing suits, and in New York it is used to prepare sponges.

INDUSTRIAL GAS LESSONS

IF IT'S DONE WITH HEAT — YOU CAN DO IT BETTER WITH GAS

Lesson No. 113

Combustion

The Effect of Heat

The third general method of making a rational analysis of coal to determine the manner in which the various elements of coal are combined in the coal substance, is to apply to the latter the medium of heat. This is a matter of great importance, particularly in respect to the production of gas and coke from coal. There are two general ways in which heat energy may be used for analyzing coal In the first place, the dry distillation, as it is called, may be carried out at a low temperature, and in the second place, it may be effected at a high temperature.

Low temperature distillation of coal produces a series of gases and hydrocarbons of various boiling points, and other properties which can be separated into seven distinct fractions. It is possible from this information to obtain a fairly accurate conception of the makeup of the coal.

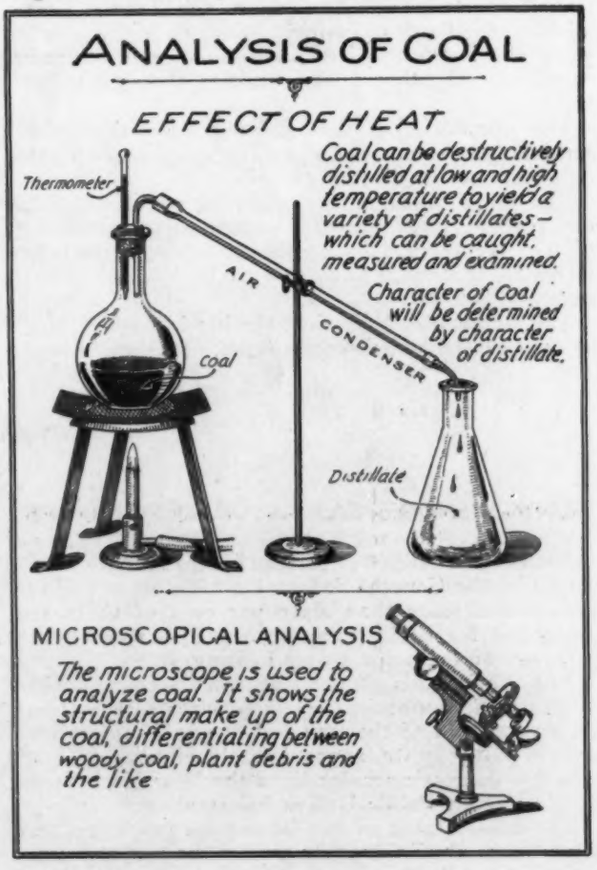
It is also possible to obtain valuable information by carrying out the dry distillation at a high temperature. In this case different fractions are also obtained, all of which vary materially from those that result in the low temperature distillation of coal.

General Conclusions

There are four general conclusions that have been developed from this work. In the first place, it has been concluded that coal contains two types of compounds, which possess different degrees of ease of decomposition. Those compounds, that are least stable, yield paraffin hydrocarbons, while those that are most stable yield hydrogen. Second, it has been found that the chemical difference between coals depends on the proportions of these two general types of compounds present in the coal substance. Third, it has also been found that the presence of carbon monoxide in the gases is probably dué to the reaction that takes place between carbon and water derived from the hydroxy compounds. In the last instance it has been established that the "paraffin-yielding" compounds correspond to the resinous substances originally present in the coal and that the "hydrogen-yielding" compounds are products obtained from the degredation of cellulose.

Microscopic Analysis

Before closing this general subject of the rational analysis of coal, mention should be made of the use of the microscope in arriving at some idea of the makeup of the coal. For this purpose thin sections of the coal were cut and examined under the miscroscope. Under this instrument it was seen that part of the coal was made up of woody matter which was called the woody coal. In addition thereto there were masses of macerated plant debris mixed with resinous, carbonaceous and mineral matter. The result of microscopic researches have been of importance in characterizing the coals and in determining their suitability for coking and other purposes.


ANALYSIS OF COAL
EFFECT OF HEAT
Coal can be destructively distilled at low and high temperature to yield a variety of distillates – which can be caught, measured and examined.
Thermometer
AIR
Character of Coal will be determined by character of distillate.
CONDENSER
coal
Distillate
MICROSCOPICAL ANALYSIS
The microscope is used to analyze coal. It shows the structural make up of the coal, differentialting between woody coal, plant debris and the like

A Change in Utility Regulation

Essential details of proposed reorganization in New York State

Don Holbrook

AT the general election in 1925, the people of the State of New York approved an amendment to the state constitution providing that the 150 or more departments, divisions and bureaus of government should be re-organized into not to exceed twenty civil divisions.

A non-partisan committee, under the chairmanship of Charles Evans Hughes, former Governor of New York State and ex-United States Supreme Court Justice, spent many months mapping out a general plan of re-organization, which, as submitted to the legislature, provides for the ultimate grouping of the civil functions of government into 18 departments.

In order to eliminate all possible confusion in the organization scheme, a new law is to be created known as "The State Departments Law," into which under an appropriate title, a separate article or chapter will give a description of the powers, duties and functions of each of the 18 separate activities, and how they are constituted.

The department of public service is to be formed by the consolidation under one administrative head of the present public service commission and the transit commission. At present, the Transit Commission regulates transit in New York City only, while the public service commission deals with the regulation of other public utilities throughout the state.

The chapter or article dealing with the public service department arranges the organization into two branches or divisions:

The state division, the head of which shall be the present public service commission, consisting of five members, to continue to be appointed for terms of ten years each and to receive an annual salary of $15,000;

The metropolitan division, the head of which shall be the present transit commission, or its successors, to consist of three members to serve for nine years each.

As the terms of office of the present transit commissioners all expire on April 16, 1926, and their terms of office are now fixed at five years each, an amendment to the public service commission law has been presented to the legislature to take effect April 15, providing that the term of office shall be nine years and that the members shall be so appointed that the term of one will expire at the end of each three years.

Members of both the public service commission (the state division of the new body) and the transit commission (the Metropolitan division of the new body) are to be appointed by the Governor, by and with the advice and consent of the Senate.

Practically the only change effected by the reorganization is in the term of office of the transit commissioners and the additional removal power vested in the governor in relation to members of the public service commission. He now has the right to remove a member of the transit commission on charges and an opportunity to be heard. In 1921, however, the law was so fixed that a member of the public service commission could only be removed on a two-thirds vote of the legislature in the same manner as judges are impeached. This privilege was deemed by the Hughes committee to be out of all proportion to the emoluments of the office, so under the provisions of the law creating the new department of public service, the governor is accorded the right of removal of both the public service commissioners and the transit commissioners, on charges and the right to be heard.

All of the functions, powers and duties and employees of the present public service commission and of the transit commission will, when the reorganized plan goes into effect January 1, 1927, be transferred bodily into the newly created department.

SURVEY SHOWS GAS FAVORED IN HOMES

A survey of 446,000 American homes recently completed by the General Federation of Women's Clubs shows that more than sixty per cent of them are using gas for cooking, and more than twenty-five per cent of them for water heating.

New York leads all the states in its consumption of gas, using approximately one-fourth of the country's total, and of the two and one-half million gas meters in the state, approximately eighty per cent measure domestic service, says the New York State Committee on Public Utility Information.

The development of gas household appliances has taken place almost entirely within the last half century, for until the advent of the electric light gas was used mainly for lighting. The first gas stove in the United States was exhibited in Philadelphia in 1876, although there are records of experiments with gas for cooking in England as early as the 18th century.

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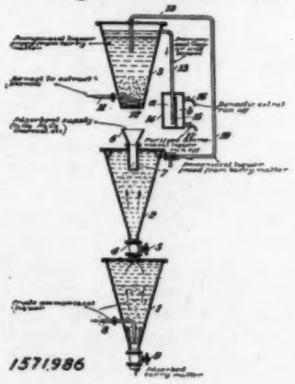
A GOOD SLOGAN

THE Southern California Gas Company recently used the slogan: "An Income from the Sale of a Necessity" in connection with some of the financial advertisements being run in the California "tabs," where space rates are high and the advertiser is compelled to employ copy that will register fast.

PROGRESS IN GAS TECHNOLOGY
Domestic and Foreign

PURIFICATION OF CRUDE AMMONIACAL LIQUORS

UNITED States Patent No. 1,571,986 is concerned with a process for the purification of crude ammoniacal liquor, consisting in subjecting the liquor to a two-stage treatment comprising the steps of initially allowing a solid absorbent to act for some time to absorb the finely divided particles of tar and, after removing the absorbed mass, of extracting the pre-purified liquor with a solvent for recovering the phenols in solution.



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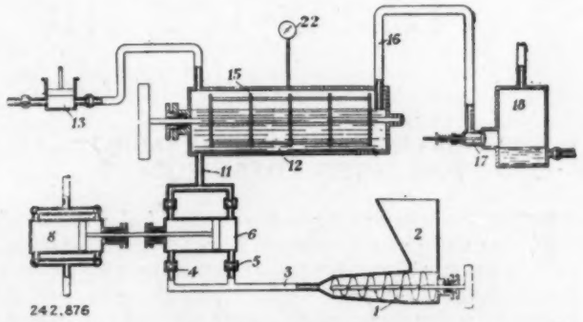
SPLITTING COAL, OILS AND OTHER HYDROCARBONS

IT is known that coal, oils and other hydrocarbons can be heated to a temperature of 300°-500° C. and pressure of 100-150 atmospheres to obtain volatile products such as benzene and petroleum. The coal may be finely powdered and made into a paste with a liquid hydrocarbon so that it can be forced into the high-pressure chamber, while if liquid hydrocarbons are treated, they are mixed with absorptive substances such as diatomite, coke ashes, alkaline earth oxides, oil shales, etc., to prevent burning. In this process difficulty is experienced owing to the uncertainty of maintaining a definite liquid level in the high pressure chamber. In the present invention, the gaseous, liquid and solid products of the reaction are withdrawn continuously from the container in such a manner that a definite liquid level is always maintained. The paste of coal or the like should be as thick as possible in this process, and this involves a further difficulty in conveying the material under pressure. This difficulty is avoided by first compressing the paste by means of a worm conveyor to 3-5 atmospheres, and then forcing the mixture into the high pressure container at 150 atmospheres by means of a high-pressure press. The required level in the container is maintained by removing the whole of the products through a pipe which dips into the container to the required depth.

The paste is supplied through a hopper 2 to a worm conveyor 1, and thence through a pipe 3 and valves 4, 5 to a press cylinder 6. The paste is then forced by a hydraulic device 8 through a pipe 11 to



the reaction vessel 12. Hydrogen is continuously supplied by a pump 13, and the mixture is stirred by means of a stirring device mounted on a horizontal shaft and carrying discs 15, which are of a diameter only slightly less than that of the vessel 12. This prevents any longitudinal mixing of the material, and ensures a sufficiently long time for the reaction. The products are forced by the internal pressure through a pipe 16 and throttle valve 17 to a container 18 at atmospheric pressure, where the liquid and solid products separate. A pressure gauge 22 is provided on the vessel 12.—British Patent No. 242,876.

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EFFECT OF AMMONIA ON PIPING

IN Chemicker Zeitung, 1926, page 48, there is a short note on the action of waters, containing ammonia, on piping and other metallic apparatus with which they come in contact. This is a matter of interest to the gas men.

There is a certain amount of uncertainty regarding the effect of ammoniacal waters on piping, and for this reason it was felt worthwhile to make a practical test in the plant.

The experiments showed that there are cases where the piping rusted very markedly in coming in contact with water containing only 8 to 15 milligrams of ammonia per liter. These waters consist partly of pure condensate and partly of condensate to which a slight addition of chemically softened water has been added. The amount of dissolved corrosive gases, namely, oxygen and carbon dioxide, and the percentage of corrosive salts in the waters were not any greater than in other waters which did not have this corrosive action. Hence, it follows, that the corrosibility of these waters must be due to their ammonia content.

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MOTOR FUEL OILS

ACCORDING to U. S. Patent No. 1,573,308, a fuel oil for the generation of power by explosion engines, is obtained from the crude tar that is recovered in the distillation of coal at temperatures up to 600° C. This tar is mixed with alcohol and liquid hydrocarbons.

GAS MERCHANDISING

Domestic – Industrial

Ideas for the Man Who Sells

William H. Matlack

PORTLAND PUTS 'EM IN APARTMENTS—ARE YOU AFTER THESE FOLKS?

THE merchandising department of the Portland Gas and Coke Company, under John H. Hartog, manager, has set a pace in procuring apartment house installations of modern gas ranges that is going to make some of the boys around the belt sit up and take notice. Apartments do not come too large or get too small to have standard gas ranges, for even if these twentieth century structures are as someone has said, "just a place to go to change one's clothes to go some place else," they are all installing gas ranges of some sort or another. Frequently the ranges are bought on a price basis—it's a mistake for the gas man to permit this—for the apartment that deserves the name, above all places of abode, should have an up-to-the-minute gas range and they will have them if the gas man will sell them and then do as Mr. Hartog has done, advertise the fact and the apartment that has installed them.

* * * * *

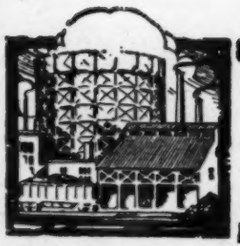
BACK YARD SELLING

WHEN a customer is well sold, he will become a salesman for you. Witness—Mrs. Brown buys a new, white enamel, oven heat control gas range and the day after the gas company delivers and installs it, Mrs. Smith, the next door neighbor, calls over the back fence, "I saw the gas company bring you a new gas range today." Whereupon Mrs. Brown starts to sell Mrs. Smith by saying, "Oh, yes, I just got sick and tired of that old fashioned gas range, without an oven regulator; I just didn't have a bit of success any more with cakes and, then, those old fashioned ranges keep one 'pot-watching' all the time." This little speech frequently implants the germ of dissatisfaction in Mrs. Smith's mind and, "I will not be outdone by Mrs. Brown," says she. And it is not many days before the gas company delivers a spanking new gas range to the Smith home. And Mrs. Smith, having been well sold, will proceed to sell others and so the chain is woven.

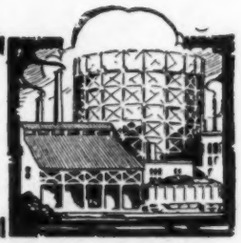
* * * * * *

A WORD ABOUT CONVENTIONS

SPRING starts the open season for conventions, and as the season opens this year, we wonder how many of the men who take the time and spend the money to attend conventions in 1926 will really derive full benefit from these meetings, where sales, advertising, distribution, manufacturing, public relations, finance and management problems will be discussed by men of wide vision and experience. We wonder how many of the men attending these conferences will enjoy the business sessions away from the convention hall and how many will regard these meetings as an ideal opportunity to secure new ideas and through entering into the discussion, be truly benefited by them. We hope there will be a greater majority this year than ever before, for why are conventions held.



NEWS OF THE GAS INDUSTRY



New England Commercial Managers Meet

Cooperative Advertising Stressed in Talk

The March meeting of the New England Association of Commercial Gas Managers held in Boston March 26, 1926, the first meeting to be held in accordance with the decision, arrived at through discussion at the annual meeting last month to hold evening dinner meetings on the second Friday following the meeting of the Gas Sales Association Division of the New England Gas Association, proved a complete success. It was well attended and the members listened to an inspiring address on advertising by Major P. J. O'Keefe, the head of the advertising agency handling the advertising of the Boston Consolidated Gas Co., who was introduced by President Frank F. Capen.

"Advertising," Major O'Keefe explained, "is selling by talking to people collectively rather than making personal calls. Its very rapid growth is indicated by the fact that while in 1912 the fifty-seven leading national mediums carried twenty-nine million dollars worth of advertising, in 1925, the Curtis Publishing Co., alone in its three papers, the Saturday Evening Post, the Country Gentleman and the Ladies Home Journal, carried a total of fifty million dollars worth of advertising. One page in the Saturday Evening Post costs $8,000 and for a year of 52 issues it would cost $416,000 in black and white. Color pages cost more.

"There are now in this country 117 million people. There are 700,000 in and around Boston that can be reached by the Boston newspapers. To reach all the people, however, it is necessary to apply co-operative selling.

Public Must Be Kept Informed

"The public is fickle. It must be constantly reminded as well as informed. The experienced politician rarely pays any attention to attacks made upon him in the newspapers. He knows that the public will soon forget. On the other hand, if he attempts to defend himself he keeps the matter before the public for a longer time and the charge makes a more permanent impression.

"Advertising keeps things alive in the public mind. There is no magic to advertising. It is just a matter of recognizing a selling opportunity and selling points.

"The advertising man learns from his experience with other products. He knows advertising mediums, advertising copy and the kinds of arguments that make the greatest appeal with the public.

"You gas men know your business. You know how to make gas, how to distribute it and how to apply it effectively. When you combine your knowledge and experience with that of the advertising man you sell more goods. Everybody with something to sell realizes the value of advertising.

Public Utilities Last to Advertise

"Public utilities have been the last to advertise largely because their business was different. However, some public utility men realized that the business was growing. They realized that people were using the product of the utility because it was doing something for them better than it could be done in any other way. It was evident that if other people could be educated and convinced there would be a tremendous increase in the business volume. Advertising was started and gas companies are now doing almost four times the business they were doing only a few years ago.

"As the business grew it became evident that the public needed to be educated along lines that would retain and increase good will. It was expensive and far from satisfactory to try to gain protection through the politicians. So the public was taken into confidence. Part of the income was set aside to educate the public in regard to the appliances and the service.

"In Chicago there was an increase of 83 per cent in the business of 1923 over 1921. There is no question about this company being on the right track.

"Tell the people that they are part owners of the company. In addition to the two million people who are stock holders, a great many more through insurance companies and savings banks are supplying the five billion dollars invested in public utilities by these institutions. Concerns are taking one-half per cent, three, four and five per cent of their income and putting it into advertising.

Cost of Advertising

"Is advertising expensive? Does it increase the cost to the consumer? Can advertising help our business? Let us consider these questions.

"Let us take the case of a page in the Saturday Evening Post. Very close to three million copies of that paper are being distributed every week. Suppose we wanted to send a personal message to three million people. It is obvious that using post cards would seem to be the cheapest way of reaching them. For three million postal cards we will have to pay $30,000. The message printed or written on them will cost money. The addressing is another expense. Before we have those postal cards mailed we have spent $35,000. We can get a full page in the Saturday Evening Post for $8,000 and that page is not nearly so likely to be thrown away as soon as it arrives as the postal card. Advertising is not an expense.

"The cost of selling Campbell's Soups has been cut in half through the use of advertising.

"Only articles of merit are worth advertising. The gas company has something of merit. Ad-

vertising will sell it. It will educate the public, teaching them the value of the goods and the service offered. It will impress upon the people the value of gas.

Telling the People About Gas

"There are hundreds of thousands of people who don't realize the value of gas. They don't know that a room can be heated with gas for a couple of hours at the cost of a shovelful of coal. They don't know that there is nothing else that will help them as gas will.

"There is not an industry that would hesitate to substitute gas for any other fuel it is using if it realized the full value to it of using gas. They are interested in lower cost of production and if they know that gas will give them a cleaner factory, better and more economical operation, they will use gas, but they must be told.

"Kitchens are changing to gas because the people are being educated. But we can't get anywhere with a hundred thousand people by calling on each person. It takes too long and it costs too much money. Through advertising we can reach all the people at once and as often as we wish. There are the national magazines, the newspapers, the class magazines and the trade magazines, as well as outdoor advertising and direct mail advertising ready to carry our sales message to our prospects. The opportunity in New England is particularly promising."

Cooperative Gas Advertising

Major O'Keefe expressed some disappointment over the lack of enthusiasm toward co-operative advertising by the New England gas companies but felt optimistic in regard to the outcome, feeling certain that the day would come when all New England gas companies would see the wisdom and the economy of joining in a co-operative effort to sell more gas.

He called attention to the lack of a well co-ordinated plan of advertising on the part of most gas companies and emphasized his opinion that a good deal of the advertising money spent was being used in such a manner as to secure minimum rather than maximum results.

A national gas advertising campaign conducted in the right way, Major O'Keefe said, will help wonderfully in the sale of gas by every gas company. The general public must be reached, the householder, the workman and everybody in any national advertising work done. Gas cannot be sold to the best advantage by using the advertising money to make a class appeal. Everybody must be educated.

Advertising, he said, makes articles sell at one-third of the price they otherwise would be sold. Advertising increases the demand, the increased demand means greater production and increased production means lower cost for production. Advertising, therefore, increases the efficiency not only of distribution but also of production. He dwelt at some length upon the importance of calling upon expert advertising counsel in the expenditure of the advertising money, comparing this with calling in the doctor when suffering from appendicitis.

Co-operative Advertising Discussed

The talk was followed by a short discussion in which M. B. Webber and J. J. Quinn took part. Both stressed the importance of co-operative advertising and Mr. Webber brought out the point that appliance manufacturers, especially in the electrical industry are trending more and more toward co-operative advertising. The iceless refrigeration manufacturers have already decided upon co-operative advertising to increase the sale of household refrigeration machines.

Mr. Quinn told how an effective demonstration at an exposition in Quincy sold more room heaters than it had been possible to sell through any other effort. All this pointed to the need of more advertising.

Plan Standardization of Pipe

Sectional Committee on Standard Specifications for Cast Iron Pipe Being Formed to Revise Specifications

A standardization project of far-reaching importance is about to be inaugurated through the formation of a representative committee on cast iron pipe, which will undertake a general program of unifying existing specifications for cast iron pipe into a consistent set of nationally recognized specifications. This committee, which will be officially known as the Sectional Committee on Standard Specifications for Cast Iron Pipe, is being sponsored by the American Gas Association, American Society for Testing Materials, American Water Works Association and New England Water Works Association and will function under the procedure of the American Engineering Standards Committee.

A. G. A. Starts Work

This development is the outcome of the submission two years ago by the American Gas Association of its standard specifications for cast iron pipe and special castings to the American Engineering Standards Committee for their approval as American standard specifications. It became evident that consideration of these specifications for such approval would involve the standardization of cast iron pipe in general, and at a conference held under the auspices of the American Engineering Standards Committee, which was widely represented by industries producing and using this product, it became clear that whereas dimensional standardization was involved principally in the specifications for gas pipe, a broader treatment of the whole problem was essential if results of the greatest benefit were to be obtained. At this conference the need for a study of the quality of metal in cast iron pipe and the problem of suitable coatings were emphasized as of primary importance to waterworks engineers.

Recently developed methods of producing cast iron pipe must be taken into consideration. The American Gas Association was willing to have the project broad-

ened, and upon the recommendation of the conference the American Engineering Standards Committee agreed to set up a broad program of standardization of cast iron pipe under its auspices and invited the American Gas Association, American Society for Testing Materials, American Water Works Association and New England Water Works Association to sponsor the organization of a representative sectional committee to carry on the actual work of investigation and standardization.

Scope of Work

The scope of the work has been defined as follows:

Unification of specifications for cast iron pipe, including materials; dimensions; pressure ratings; methods of manufacture (including such new development as centrifugal casting), in so far as they may be necessary to secure satisfactory specifications; elimination of unnecessary sizes and varieties; consideration of the possibility of developing a co-ordinated scheme of metallic pipe and fittings applicable to all common mediums; and methods of making up joints in so far as they are determining as to the dimensional design of cast iron pipe.

The types of cast iron pipe to include: bell and spigot pipe; flanged pipe; flanged and bell mouth fittings and wall castings; pipe elbows, tees, Y's, return bends, and other fittings not now included in standard lists; cast iron pipe threaded for flanges or couplings; soil pipe and other light types of cast iron pipe and fittings. The standardization is not to include methods of installing pipe and similar matters, except as to the making up of joints in its relationship to the dimensional standardization of pipe and fittings, as noted above.

The sponsors have been engaged in the details of organizing the Sectional Committee, which will comprise representative producers and users of cast iron pipe, and independent technical experts.

Eleven technical societies and associations now are represented in the work of the committee. This stage of the work is practically completed.

The gas men on the committee are:

Walton Forstall, engineer of distribution, United Gas Improvement Co., Philadelphia.

H. E. Bates, assistant chemical engineer, Peoples Gas Light & Coke Co., Chicago.

C. C. Simpson, Jr., general superintendent, Department of Mains and Service, Consolidated Gas Co., New York.

Chas. W. Hoy Joins International Utilities Corp.

Chas. W. Hoy, who was the general manager of the Peoples Gas Co. of Glassboro, N. J., for fifteen years, has joined the International Utilities Corp. of New York City. His office is now located at 120 Broadway, New York City.

U. G. I. Eulogizes Randal Morgan

Directors of the United Gas Improvement Company paid tribute to the late Randal Morgan at their regular monthly meeting on March 25. The following resolution was adopted and spread on the records of the company:

"Randal Morgan, for more than forty years an officer of the United Gas Improvement Company, died on Saturday, March 20, 1926.

"Mr. Morgan entered the service of the company as general counsel in 1882. In 1892 he was elected vice-president. In 1923 he resigned the office of vice-president and was made chairman of the Executive and Finance Committee, holding this latter office at the time of his death.

"Throughout this period of forty-four years he devoted his untiring energy and his high abilities to the upbuilding of this company, and its growth to its present position of strength and influence is due in large measure to this devotion. As a lawyer he possessed such a thorough understanding of fundamental legal principles as enabled him to reach sound conclusions affecting the policies of the company without dependence upon decided cases. As vice-president and later as chairman of the Executive and Finance Committee, he brought to bear upon the complex and rapidly developing public utility problems a power of analysis and a force of personality which found no obstacle insuperable. His mind was essentially constructive. He long since perceived, as few men then did, the certainty of a great development and growth in public utilities. As a financier he thoroughly understood the economies of public utilities, and consistently insisted that the financial operations with which he was concerned should rest upon an economically sound and safe basis.

"As a man, Mr. Morgan possessed in an unusual degree a charm of manner and such an interest in men and things as endeared him to all with whom he was associated.

"With a keen sense of loss and in grateful remembrance of the services which he has rendered to the United Gas Improvement Company, we record our appreciation of Randal Morgan as a lawyer, as an executive, as a financier, as a man and as a friend.

"Resolved, that an engrossed copy of the above be forwarded to Mr. Morgan's family."

* * *

Gas Rates Reduced for Big Consumers

Buffalo, N. Y.—A cut in gas rates scheduled by the Iroquois Natural Gas Company for large customers in Erie, Cattaraugus and Allegany Counties has been announced. It was approved by the Public Service Commission.

The new rate cuts five cents a thousand cubic feet off the price of gas in excess of 50,000 feet a month. It is intended to encourage industrial and commercial use of gas. It also will benefit householders using gas for furnace fuel.

The new schedule is 70 cents a thousand for the first 50,000 feet and 65 cents for all gas above that quantity. The five cents a thousand rebate for prompt payment of bills continues.

A. G. A. Plans Mat Service

The American Gas Association has announced a mat service for local gas companies to tie in with the National Advertising Campaign of the Industrial Gas Section.

The national campaign for 1926 conforms to correct advertising procedure in every respect. The advertisements that appear in the national trade papers reach the prospective user of industrial gas in his office. Announcement of the booklet "Gas—The Ideal Factory Fuel" comes to the manufacturer's attention and he writes to the American Gas Association for a copy. The Association sends the booklet, and also informs the local gas company that the request has been made. At the same time the local company is advertising to the manufacturer through the local newspapers, using the mats supplied by the Association. When the Association writes the gas company telling of the request for the booklet, the local representative calls on the manufacturer and the tie-up is complete.

The booklet entitled "Gas, the Ideal Factory Fuel" is issued by the Industrial Gas Section of the A. G. A. It contains a very interesting description of the advantages of gas as an industrial fuel and it also discusses the relation between gas and electricity in this field. It takes up in detail the use of gas and lays particular stress on its use in the metal industry, in stereotype metal melting, in the food industry, in the textile industry, hotels, restaurants and laundries and in the glass and brick industries.

Municipal Gas Co. to Extend Service

Schenectady, N. Y.—Residents of the towns of Niskayuna, Rotterdam and Colonie who reside along the line traveled by the high pressure gas main between Troy and this city will soon be given service equal to that of their neighbor in the cities, according to plans of the Municipal Gas Company of Albany and the Adirondack Power and Light Corporation of this city. It is thought that a canvass of these residents will be begun in the early spring and actual construction started some time during the summer.

According to tentative plans, the Albany company has outlined a plan whereby the residents living within 100 feet of the main will receive gas service at the cost basis charged for connections in the city, while those residing more than 100 feet from the line will have to pay at least a part of the installation charge covering main extensions. The ratio of cost between the company and the consumers has not been decided.

It is understood that the Adirondack corporation will co-operate in this and that the actual service connections and installations in the whole territory will be made by the local utilities company.

Franchise rights in Colonie are held by the Albany company while the A. P. and L. hold the franchise rights in Niskayuna and Rotterdam.

* * *

Midland Utilities Co. Makes Annual Report

Chicago, Ill.—Rapid development of the Midland Utilities Company, an investment company which owns or controls public utility companies in Northern Indiana and Western Ohio, is shown by the first annual printed report of the company received by stockholders recently. The Midland Utilities Company began business on June 22, 1923, but its securities were not offered to the public until March, 1925.

The annual report shows the total income of the company in 1925 was $2,985,781.60, compared with $2,118,716.70 in 1924.

Net income for the last year was $2,287,912.38, compared with $1,517,104.65 in 1924. After the payment of dividends on the prior lien and preferred stocks and $219,048 paid on the common stock, $539,914.55 was carried to the surplus account, which on December 31 aggregated $1,115,607.21.

Gross earnings of the operating subsidiaries in the Midland group in 1925 were $18,188,498.51, compared with $12,172,588.75 in 1924. The combined surplus earnings of the Midland Utilities Company and subsidiaries in 1925 were $1,135,840.18, compared with $889,734.84 in 1924.

* * *

Penna.-Ohio Electric Co. to Sell Gas Plant

Youngstown, Ohio.—Application has been filed with the Ohio Public Utilities Commission by the recently incorporated Youngstown Gas Company and the Pennsylvania-Ohio Electric Company, for permission for the gas company to purchase and operate the gas property and business of the P. & O. in Youngstown.

Plans are under consideration for the installation of by-product coke plants in connection with the North avenue and Lowellville power stations, the residual fuel to be used by the power stations for electric generation and the gas, which would be a by-product of the coal distillation, to be distributed by the gas company.

The officers of the new gas company are C. S. McCalla, president, and E. G. Dunlap, secretary.

A price of $300,000 has been agreed upon. Payment is to be made by the gas company by delivering to the P. & O. all of its common stock without nominal or par value. The transfer of the property will be made immediately after authorization of the agreement by the utilities commission and its ratification by the directors of the P. & O.

* * *

UTILITY MERGER IN SOUTH

Tennessee Properties Combine Into $10,000,000 Corporation

Nashville, Tenn.—Consolidation of the Chattanooga Coke and Gas Company, Inc., the Bonair Coal and Iron Corporation and the J. J. Grace, Jr., properties at Rockdale, under the name Tennessee Products Corporation, has been announced. The consolidated properties are valued at approximately $10,000,000.

Capitalization will include $1,000,000 of preferred stock and 300,000 shares of no par value stock, $1,500,000 first mortgage bonds and $700,000 notes.

William Wrigley, Jr., of Chicago is chairman of the board and Robert J. Immerfall of Chicago, president.